

Unit 15.5

Day 3

Graphing Rational Functions

Part 2

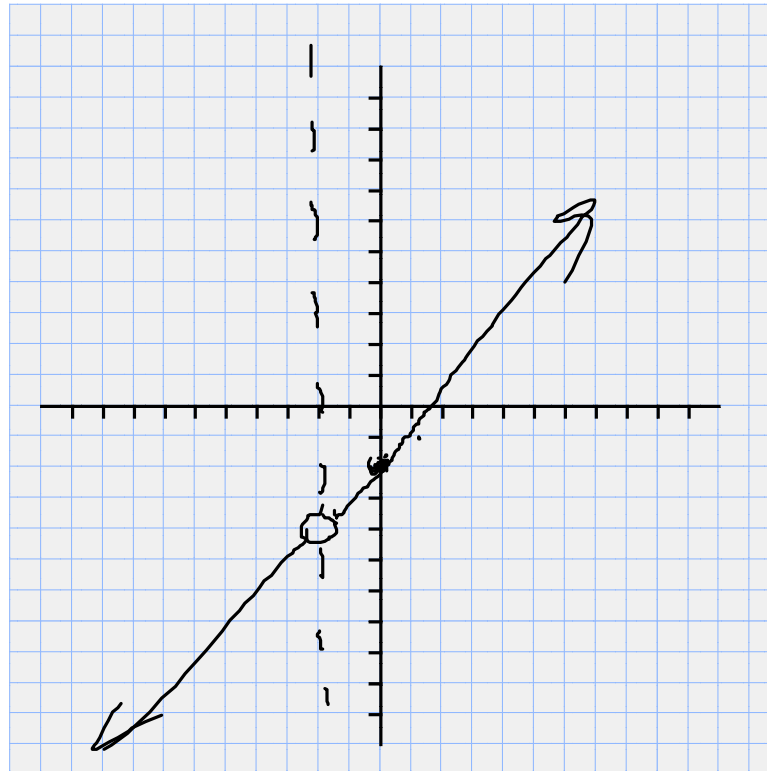
Always try to reduce the rational functions first.

Ex1: $f(x) = \frac{x^2 - 4}{x + 2}$

$x \neq -2$

$$f(x) = \frac{(x-2)\cancel{(x+2)}}{\cancel{x+2}}$$

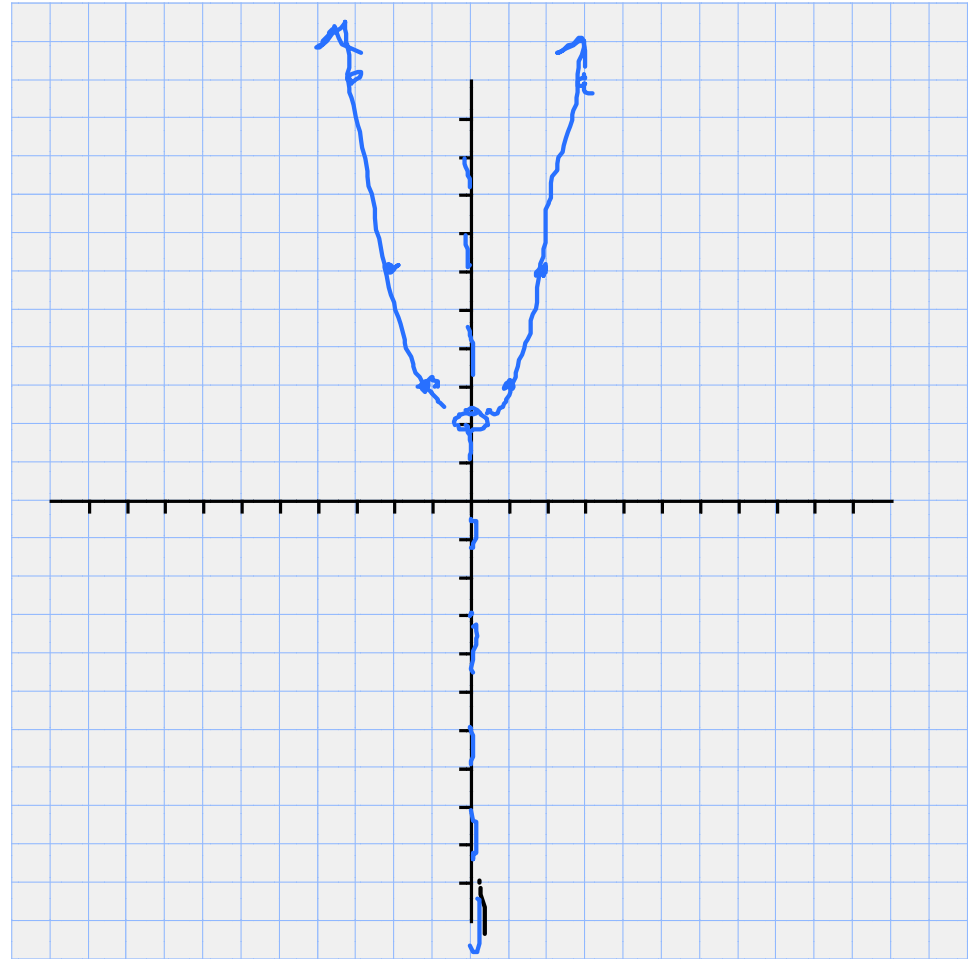
$$y = x - 2$$



Ex2: $f(x) = \frac{x^3 + 2x}{x}$

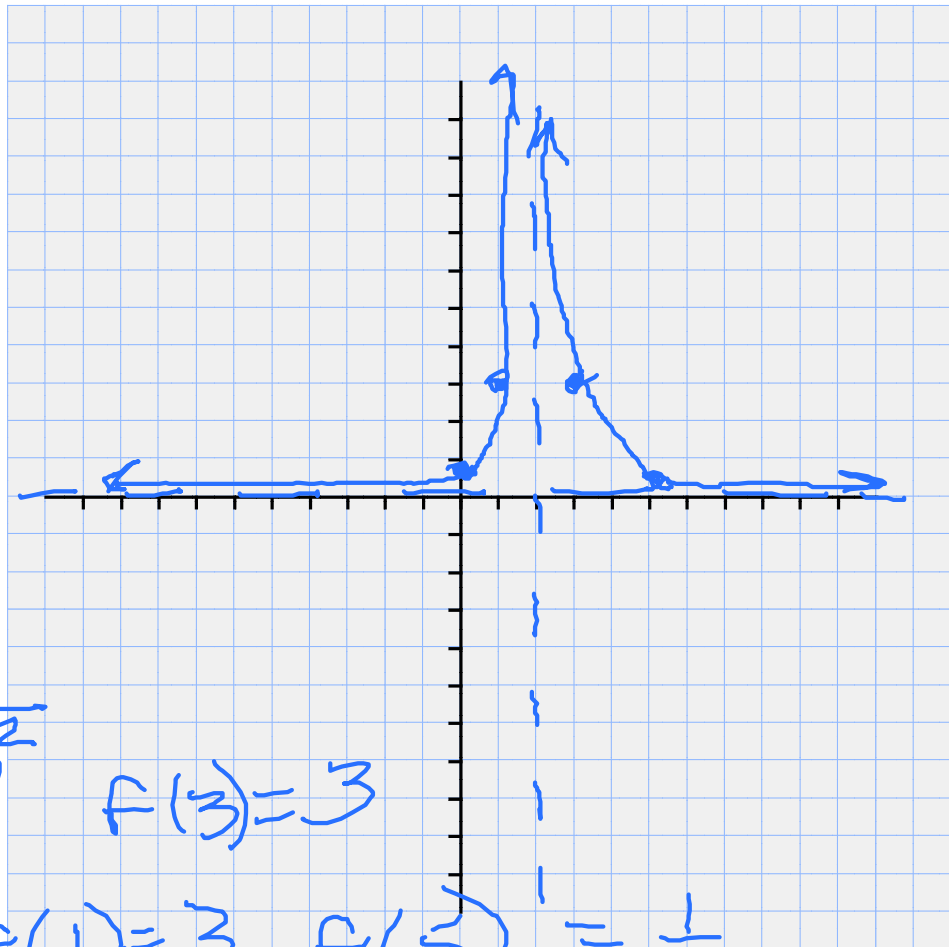
$x \neq 0$

$$f(x) = \frac{\cancel{x}(x^2 + 2)}{\cancel{x}} = x^2 + 2$$



Ex3: $f(x) = \frac{3}{(x-2)^2}$

V/A	HA	X-int
$(x-2)^2=0$ $x=2$	$y=0$ $0 \neq 3$ $\frac{0}{(x-2)^2}$	$0 \neq \frac{3}{(x-2)^2}$ No xint
	$0 \neq 3$ Cross? No	<u>y-int</u> $f(0) = \frac{3}{(0-2)^2}$ $f(0) = \frac{3}{4}$



$f(3) = 3$

$f(1) = 3$ $f(5) = \frac{1}{3}$

Ex4: $f(x) = \frac{6x^2 - 3x}{x^2 + x - 2}$

VA
 $x^2 + x - 2 = 0$
 $(x+2)(x-1) = 0$
 $x = -2, 1$

HA
 $y = 6$ $(\frac{4}{3}, 6)$ $(0, 0)$ $(\frac{1}{2}, 0)$

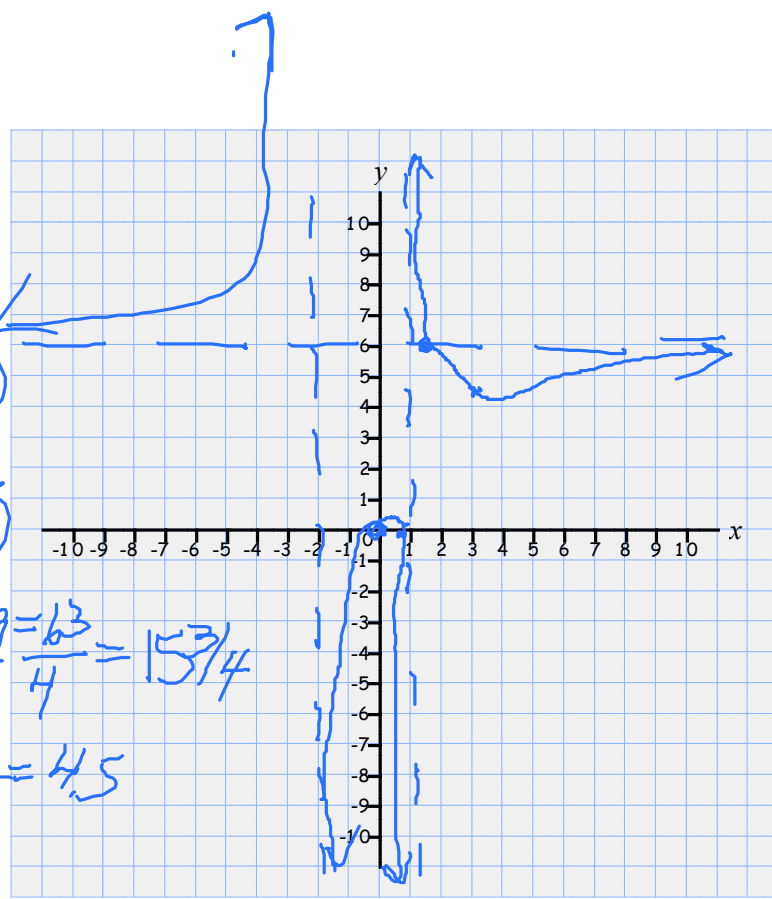
$6 = \frac{6x^2 - 3x}{x^2 + x - 2}$

$6x^2 + 6x - 12 = 6x^2 - 3x$
 $9x = 12$ $x = \frac{4}{3}$

X-int
 $0 = \frac{6x^2 - 3x}{x^2 + x - 2}$
 $0 = 6x^2 - 3x$
 $0 = -3x(2x - 1)$
 $x = 0$ $x = \frac{1}{2}$

$f(-3) = \frac{54 + 9}{10} = \frac{63}{10} = 6.3$

$f(3) = \frac{45}{10} = 4.5$



Ex5: $f(x) = \frac{x^2 - 2x + 3}{x - 2}$

$$f(x) = \frac{x^2 - 2x + 3}{x - 2}$$

~~HA~~
VA: $x = 2$

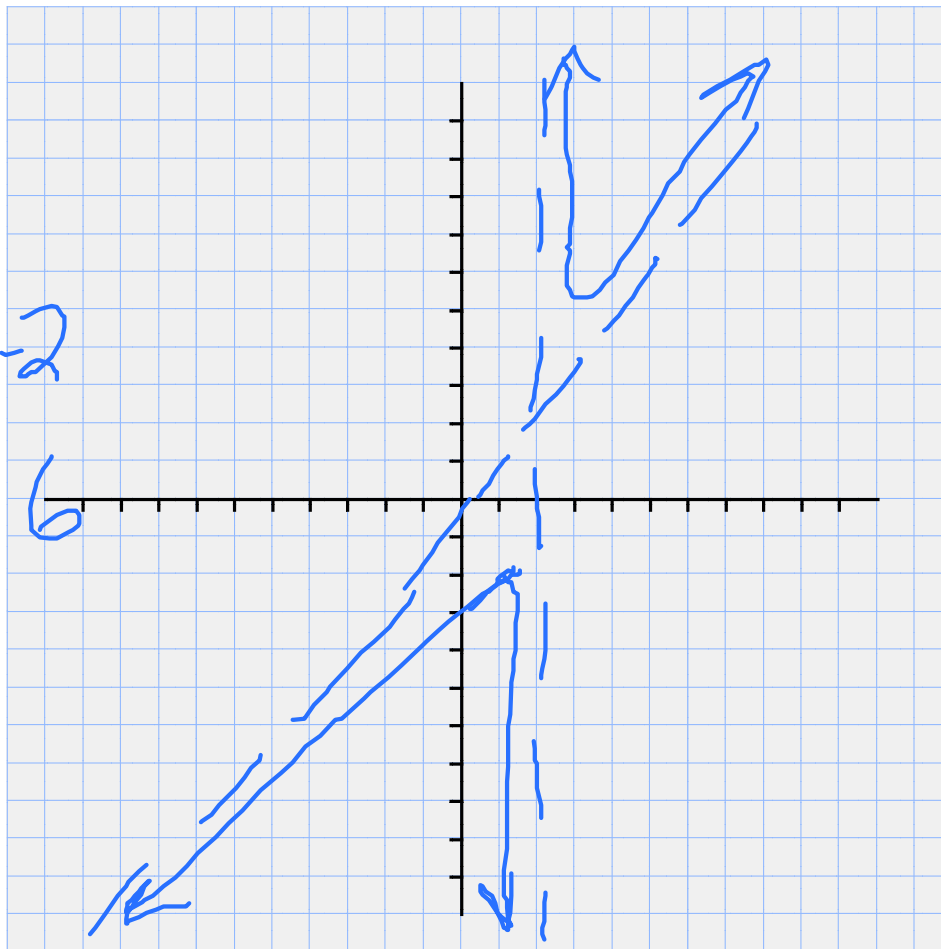
HA

$$\begin{array}{r} 2 \overline{) 11-23} \\ \underline{2} \\ 103 \end{array}$$

$y = x$

$$f(1) = -2$$

$$f(3) = 6$$



Homework

p. 327: 25, 26-46 (even)